Patent Claims

1. An apparatus for detection of contact erosion on switching contacts (K1, K1') in an electrical switching device (S) with the contact erosion being produced on at least one opening and closing switching contact pair (K1, K1') in the switching device (S) having at least one optical waveguide (LWL) and at least one detector (D), in which case light which originates from at least one light source (Q) can be injected into the at least one optical waveguide (LWL) and can be passed from the optical waveguide (LWL) to the at least one detector (D), characterized in that
the at least one optical waveguide (LWL) is arranged with respect to the at least one switching contact pair (K1, K1') such that the intensity (as measured by the at least one detector (D)) of the light which is injected into the at least one optical waveguide (LWL) decreases as the number of contact erosion particles which are produced by the contact erosion in the electrical switching device (S) increases.

2. The apparatus as claimed in claim 1,
characterized in that
the light source (Q) is the arc which is produced by the opening and closing switching contact pair (K1, K1').

3. The apparatus as claimed in claim 1 or 2,
characterized in that
the light source (Q) is at least one light-emitting diode which, together with the at least one optical waveguide (LWL), forms a light barrier (LS).

4. The apparatus as claimed in claim 1 or 2,
characterized in that
the at least one light source (Q) is a further optical waveguide (LWLQ).

5. The apparatus as claimed in claim 4,
characterized in that
the light from the further optical waveguide (LWLQ) emerges on one of its end faces, and this end face together with the at least one optical waveguide (LWL) forms a light barrier (LS).

6. The apparatus as claimed in claim 4,
characterized in that
the light from the further optical waveguide (LWLQ) emerges radially over its length.

7. The apparatus as claimed in one of claims 1 to 6,
characterized in that
a plate (P) is arranged between the light source (Q) and the at least one optical waveguide (LWL), has a transmission level for the light originating from the light source (Q), and is arranged with respect to the at least one switching contact pair (K1, K1') such that contact erosion particles are deposited on the plate (P), with the transmission level decreasing as the number of contact erosion particles increases.

8. The apparatus as claimed in one of the preceding claims 1 to 7,
characterized in that
one switching contact pair of a multipole switching device (S) has an associated optical waveguide (LWL1, LWL2, LWL3), with the optical waveguide (LWL1, LWL2, LWL3) being arranged with respect to the associated switching contact pair such that the intensity (as measured by a detector (D)) of the light which is injected via the optical waveguide (LWL1, LWL2, LWL3) is a measure for the contact erosion of the associated switching contact pair.

9. The apparatus as claimed in one of claims 1 to 8,
characterized in that

the detector (D) transmits a signal, which corresponds to the measured intensity, to a tripping unit (A), and this tripping unit (A) controls the switching device (S) as a function of the signal.

10. The apparatus as claimed in one of claims 1 to 9, characterized in that
the intensity (as measured by the detector (D)) is transmitted via means for communication, for further evaluation.

11. An electrical switching device having an apparatus as claimed in one of claims 1 to 10,
characterized in that
the electrical switching device (S) is a low-voltage circuit breaker or a contactor.